

REMARKS

By this amendment, claims 6, 19, 30 and 36 have been cancelled without prejudice or disclaimer and claims 1, 14, 25, 31, 37, 42, 44, 49 and 51 have been amended to more particularly define the invention and clearly distinguish over the prior art of record. Claims 5, 18, 29 and 35 have been previously cancelled. Accordingly, claims 1-4, 7-17, 20-28, 31-34, 37-52 are currently active in this application, of which claims 1, 14, 25, 31, 37, 44, 49 and 51 are independent.

Applicant respectfully submits that the above amendments do not add new matter to the application and are fully supported by the specification. In view of the above Amendments and the following Remarks, Applicant respectfully requests reconsideration and withdrawal of the objections and rejections for at least the reasons discussed below.

Interview Summary

Applicant wishes to thank Examiner Juntima for her outstanding courtesy and cooperation exhibited during the personal interview conducted on March 31, 2008.

During the above-noted interview, Applicant's undersigned representative discussed the features of the invention and the advantages thereof with respect to the prior art. Moreover, Applicant's undersigned representative discussed the references cited by the Examiner and pointed

out the shortcomings thereof with respect to the features of the present invention. Also, Applicant's undersigned representative discussed how claims 37, 38, 44, and 45 did not contain new matter.

Objection to the Specification

The specification was objected to for introducing new matter into the disclosure under 35 U.S.C. §132(a). Particularly, the Examiner stated "[t]he claim limitations recited amended claims 37-38 and 44-45 lack antecedent basis in the specification and introduce new matter into the specification ... In other words, the specification does not teach a network switching device that performs a flow control on itself by sending a pause frame and a pause release frame to itself based on the counters and corresponding thresholds." (Office Action, pages 3-4). This objection is respectfully traversed.

As described in detail below, the claimed process and apparatus of the invention is fully enabled and finds antecedent basis in the specification. Nevertheless, as discussed and agreed to in the interview with the Examiner, the claims have been amended to clarify that the process and apparatus does not necessarily send and receive the same pause frame. In particular, claims 37 and 44 have been amended to recite that the generated pause frame may be different from the received pause frame.

In support thereof, Fig. 4 of the specification shows a queue controller 400 and ingress modules 214 and egress modules 216. The queue

controller 400 includes reserve modules 406 and virtual queue modules 416, which are connected to the ingress modules 214, respectively. The queue controller 400 further includes a forward module 402 and output queues 408, which are connected to the egress modules 216.

The specification describes:

"each virtual queue module 416 comprises a plurality of counters, one of service of the frames of data received by network switch 200. Each counter keeps a count of the number of buffers storing frames of data that (1) have the class of service of the counter, (2) were received on the channel 204 served by the counter and enqueued to one of output queues 408, and (3) have not yet been transmitted by switch 200. The counts kept by these counters are used to implement quality of service flow control ..." (Paragraph [0030])

"When the count of any counter exceeds a "pause" threshold P_{on} (step 718), the corresponding egress module 216 exercise flow control on the corresponding channel for the class of service of the counter (step 720)." (Paragraph [0045])

"... the port 202 exercises flow control on the channel by sending a "pause" frame to the channel and release flow control by sending a "pause release" frame to the channel." (Paragraph [0050])

"When the count of any counter falls below a "pause release" threshold P_{off} (step 736), the corresponding egress module 216 terminates flow control on the corresponding channel for the class of service of the counter (step 738)." (Paragraph [0052]).

"In general, in one aspect, the invention features a network switching device comprising a memory adapted to store frames of data; an egress

module adapted to retrieve the frames of data from the memory, and to transmit the frames of data to a channel, wherein each of the frames of data has one of a plurality of classes of service; and an ingress module adapted to receive a pause frame indicating one or more of the classes of service to be paused; wherein, in response to the pause frame, the egress module is further adapted to cease to transmit the frames of data having the one or more classes of service to be paused, and continue to transmit the frames of data not having the one or more classes of service to be paused." (Paragraph [0011])

It is submitted that the specification discloses a network switching device that exercises flow control by sending a pause frame and a pause release frame based on the counters and corresponding thresholds. Moreover, the pause frame and pause release frame may control a network switch that receives the same. Thus, it is respectfully submitted that the previous amendments to claims 37, 38, 44 and 45 do not introduce new matter into the disclosure of the invention and, hence, the objection of the specification under 35 U.S.C. §132(a) is not appropriate.

Nevertheless, as noted above, claims 37 and 44 have been amended to even more clearly show that there is no new matter. Accordingly, Applicant respectfully requests withdrawal of the objection to the specification.

Objection to the Claims

Claims 1, 6, 19, 30 and 33 were objected to for several informalities. This objection is respectfully traversed.

In this response, claim 1 has been amended to delete "of" as suggested by the Examiner, and claims 6, 19, 30 and 36 have been cancelled as also suggested by the Examiner.

Accordingly, Applicant respectfully requests withdrawal of the objection to claims 1, 6, 19, 30 and 33. This amendment is not made for the purpose of avoiding prior art or narrowing the claimed invention, and no change in claim scope is intended. Therefore, Applicant does not intend to relinquish any subject matter by these amendments.

Rejection of Claims under 35 U.S.C. §112, First Paragraph

Claims 37-48 stand rejected under 35 U.S.C. §112, first paragraph as failing to comply with the enable requirement. In the Office Action, the Examiner stated that "[t]he specification fails to disclose the network switching device that comprises the egress module And an ingress module ... in the same network switching device as recited in claims 37-38 and 44-45 in such a way as to enable one skilled in the art ... to make and/or use the invention. Applicant respectfully traverses this rejection for at least the following reasons.

As mentioned above in the Objection to the Specification, the specification discloses a network switching device that exercise flow control by sending a pause frame and a pause release frame based on the counters and corresponding thresholds. Thus, it is respectfully submitted that the

specification discloses the features recited in claims 37-48 in such a way as to enable one skilled in the art to make and/or use the invention, hence, the objection of the specification under 35 U.S.C. §132(a) is not appropriate. Moreover, as noted above, the claims have been amended to more clearly define the invention.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 37-48 under 35 U.S.C. §112, first paragraph.

Rejection of Claims under 35 U.S.C. §112, Second Paragraph

Claims 1-4, 6-17, 19-28, 30-34 and 36-52 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite. Applicant respectfully traverses this rejection for at least the following reasons.

In the Office Action, the Examiner stated that the limitation "enqueue each of the buffers to the one or more queues" in claim 1 is unclear. In this response, for the purpose of mere clarification, independent claim 1 has been amended to recite "a forwarding module configured to enqueue each of the one or more buffers by sending a pointer for each of the one or more buffers to the one or more queues" as suggested by the Examiner. Further, independent claims 14, 25, 31, 37, 44, 49 and 51 have been also amended in a similar manner for further clarification. Also, claim 42 has been

amended to recite "The network switching device of claim 37, further comprising a memory including the buffers" to address the antecedent basis.

Additionally, minor amendments have been made to the claims in order to improve the language thereof. In these amendments, Applicant has made several changes to the language of the claims to render the same more self consistent, as well as more fully in compliance with U.S. syntax, idiom and grammar. These amendments do not change the scope of the claims but are merely cosmetic changes that give rise to no file wrapper estoppel.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-4, 6-17, 19-28, 30-34 and 36-52 under 35 U.S.C. §112, second paragraph. This amendment is not made for the purpose of avoiding prior art or narrowing the claimed invention, and no change in claim scope is intended. Therefore, Applicant does not intend to relinquish any subject matter by these amendments.

Rejection of Claims under 35 U.S.C. §103

Claims 1, 2, 7-11, 14, 15, 20-22, 25, 26, 31, 32, 49 and 51 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,405,258 issued to Erimli, et al. (hereafter "Erimli"). Applicant respectfully traverses this rejection for at least the following reasons.

In the Office Action, the Examiner admitted "Erimli does not explicitly teach that the tracking number of queue entries is done by using a plurality of counters, storing a corresponding count, incrementing the count when the forwarding module enqueues one of the buffers, and decrementing the count after the stored data is transmitted, and exercising flow control when the count for the class of service exceeds the threshold as recited in the claim." (Office Action, page 7)

Regarding the missing features, the Examiner took Official Notice that "it is a common practice and well known in the art to use counters to quantitatively keep track of the number of queue/buffer entries represented by a count by incrementing a count when data (e.g., a pointer) is stored into one of the queue/buffer entries and decrementing the count when data (e.g., a pointer) is removed from the queue/buffer entry." (Office Action, page 7)

On this basis, the Examiner asserted that "it would have been obvious ... to modify the teaching of Erimli to apply the concept of tracking the number of queue/buffer entries including incrementing and decrement[ing] count such that a plurality of counters comprising one counter for each of the classes of service when each of the counters is configured to store a count for the channel for a respective one of the classes of service, increment the count when the forwarding module enqueues one of the buffers storing the data of one of the frames having the respective class of service, and decrement the count after the data stored in a buffer for a

frame received from the channel and having the respective class of service is transmitted from the network switching device, and exercising flow control when the count for the class of service exceeds the threshold by the egress module would be included as claimed" in order to "quantitatively track the number of queue entries (i.e., frame pointers) for each class of service using a count." (Office Action, page 7). This assertion is respectfully traversed at least for the following reasons.

Pursuant to MPEP 2144.03(c), Applicant timely challenges the Examiner's Official Notice because the assertion noted in the Official Notice is not a common practice and well known in the art. Moreover, Applicant respectfully submits that, even if the assertion noted in the Official Notice is indeed a common practice and well known in the art, it would not have been obvious to modify and/or combine the teachings of Erimli and/or the fact noted in the Official Notice, whether taken alone or in any proper combination, to arrive at the invention recited in, e.g., claims 1, 14, 25, 31, 49 and 51.

For example, with respect to claim 1, as admitted in the Office Action, Erimli fails to disclose or suggest the claimed features of:

"one or more queues;
a forwarding module configured to enqueue
each of the one or more buffers by sending a pointer
for each of the one or more buffers to the one or
more queues after the ingress module stores the
data frames in one or more of the one or more
buffers; and

a plurality of counters comprising one counter for each of the classes of service, wherein each of the counters is configured to

- store a count for the channel for a respective one of the classes of service,
- increment the count when the forwarding module enqueues one of the buffers storing the data of one of the frames having the respective class of service, and
- decrement the count after the data stored in a buffer for a frame received from the channel and having the respective class of service is transmitted from the network switching device; and

an egress module configured to exercise flow control on the channel for each of the classes of service when the count for the class of service exceeds a predetermined threshold for the class of service."

The Official Notice is directed to assertion that it is a common practice and well known in the art to use counters to quantitatively keep track of the number of queue/buffer entries represented by a count by incrementing a count when data (e.g., a pointer) is stored into one of the queue/buffer entries and decrementing the count when data (e.g., a pointer) is removed from the queue/buffer entry.

Thus, even if Erimli is modified to include counters to keep track of the numbers of queue/buffer entries, as asserted in the Official Notice, there is no teachings for, inter alia, "an egress module configured to exercise flow control on the channel for each of the classes of service when the count for the class of service exceeds a predetermined threshold for the class of

service," as recited, for example, by claim 1. Thus, the counters referenced by the Official Notice do not cure the deficiency of Erimli.

Further, Erimli fails to provide any motivation for the combination or modification asserted by the Examiner. More specifically, Erimli does not provide any motivation for "an egress module configured to exercise flow control on the channel for each of the classes of service when the count for the class of service exceeds a predetermined threshold for the class of service," as recited, for example, by claim 1. If the Examiner wishes to maintain the position that the motivation for the asserted combination or modification is found in the prior art, the Examiner is respectfully requested to specifically point out where in the prior art the motivation is found.

For at least these reasons, it is respectfully submitted that it would not have been obvious to modify and combine the teachings of Erimli and/or the assertion noted in the Official Notice, whether taken alone or in any proper combination, to arrive at the invention recited in, e.g., claims 1, 14, 25, 31, 49 and 51. Thus, it is submitted that claims 1, 14, 25, 31, 49 and 51 are patentable over Erimli and/or the assertion noted in the Official Notice, whether taken alone or in any proper combination. Claims 2, 7-11, 15, 20-22, 26 and 32 depend from independent claims 1, 14, 25 and 31, and are patentable for at least the reasons provided above with regard to claim 1, 14, 25 and 31, as well as further reasons related to their own recitations.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 2, 7-11, 14, 15, 20-22, 25, 26, 31, 32, 49 and 51 under 35 U.S.C. §103(a).

Claims 3, 4, 6, 12, 13, 16, 17, 19, 23, 24, 27, 28, 30, 33, 34, 36, 50 and 52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Erimli in view of U.S. Publication No. 2003/0123393 by Feuerstraeter, et al. (hereafter "Feuerstraeter"). Applicant respectfully traverses this rejection for at least the following reasons.

Claims 3, 4, 6, 12, 13, 16, 17, 19, 23, 24, 27, 28, 30, 33, 34, 36, 50 and 52 are dependent from independent claims 1, 14, 25, 31, 49 and 51. As admitted by the Examiner, claim 1 is patentable over Erimli because Erimli fails to disclose or suggest the claimed features of:

- "one or more queues;
- a forwarding module configured to enqueue each of the one or more buffers by sending a pointer for each of the one or more buffers to the one or more queues after the ingress module stores the data frames in one or more of the one or more buffers; and
- a plurality of counters comprising one counter for each of the classes of service, wherein each of the counters is configured to
 - store a count for the channel for a respective one of the classes of service,
 - increment the count when the forwarding module enqueues one of the buffers storing the data of one of the frames having the respective class of service, and
 - decrement the count after the data stored in a buffer for a frame received from the channel and

having the respective class of service is transmitted from the network switching device; and
an egress module configured to exercise flow control on the channel for each of the classes of service when the count for the class of service exceeds a predetermined threshold for the class of service.”

It is submitted that Feuerstraeter fails to cure the deficiency of Erimli. For example, Feuerstraeter is directed to a method and apparatus for priority-based flow control in an Ethernet architecture. However, Feuerstraeter does not teach, *inter alia*, “an egress module configured to exercise flow control on the channel for each of the classes of service when the count for the class of service exceeds a predetermined threshold for the class of service,” as recited in claim 1, for example.

Since none of the cited references disclose the aforementioned claimed features, it is respectfully submitted that it would not have been obvious to modify and combine the teachings of Erimli and/or Feuerstraeter, whether taken alone or in any proper combination, to arrive at the invention recited in, e.g., claim 1. Thus, it is submitted that claim 1 is patentable over Erimli and/or Feuerstraeter, whether taken alone or in any proper combination. Claims 3, 4, 6, 12, 13 depend from independent claim 1, and are patentable for at least the reasons provided above with regard to claim 1, as well as further reasons related to their own recitations.

Similarly, it is submitted that claims 14, 25, 31, 49 and 51 are patentable over Erimli and/or Feuerstraeter, whether taken alone or in any

proper combination for the reasons similar to those of claim 1. Claims 3, 4, 6, 12, 13, 16, 17, 19, 23, 24, 27, 28, 30, 33, 34, 36, 50 and 52 depend from independent claim 14, 25, 31, 49 and 51, and are patentable for at least the reasons provided above with regard to claim 14, 25, 31, 49 and 51, as well as further reasons related to their own recitations.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 3, 4, 6, 12, 13, 16, 17, 19, 23, 24, 27, 28, 30, 33, 34, 36, 50 and 52 under 35 U.S.C. §103(a).

CONCLUSION

Applicant believes that a full and complete response has been made to the Office Action and respectfully submits that all of the stated objections and grounds for rejection have been overcome or rendered moot. Accordingly, Applicant respectfully submits that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicant's undersigned representative at the number below to expedite prosecution. Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully Submitted,

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